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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/619,591	07/16/2003	Shih-Hsien Wu	TAIW 813	7448
23995	7590	09/21/2007	EXAMINER	
RABIN & Berdo, PC 1101 14TH STREET, NW SUITE 500 WASHINGTON, DC 20005			NADAV, ORI	
			ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/619,591	WU ET AL.	
	Examiner	Art Unit	
	Ori Nadav	2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 September 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 37-61 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 37-61 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 September 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 60 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no support in the specification for the claimed limitation of an inorganic substrate being fully embedded in said one of the two organic substrates, as recited in dependent claim 60.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 37-40, 42-45 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shaheen (5,030,499) in view Hashemi et al. (6,867,493).

Regarding claims 37-39 and 49-51, Shaheen teaches in figure 1 and related text a composite laminated substrate for integrated and minimized electronic circuits, comprising:

an inorganic ceramic substrate 18 having at least one passive component 14, 20 embedded therein; and

an organic substrate 10 which is laminated to one side of the inorganic substrate and which has electrical connections 14 between outer input/output port and the at least one passive component of the inorganic substrate.

Shaheen does not teach an organic substrate having circuits for electrical connections between outer input/output ports and the at least one passive component of the inorganic substrate.

Hashemi et al. teach in figure 8 and related text an organic substrate 820 having circuits for electrical connections between outer input/output ports and at least one passive component.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use an organic substrate having circuits for electrical connections between outer input/output ports and the at least one passive component of the inorganic substrate in Shaheen's device in order to reduce the size of the device by using conventional organic substrate comprising circuits for electrical connections.

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Regarding the process limitations recited in claims 39-40 and 43-44 ("passive component is made from the process selected from the group consisting of thick film process and thin film process", "passive component is made by a semiconductor fabrication process", "plurality of printed circuit boards are stacked and have separately-fabricated circuitry", "organic substrate has an outer surface layer which is a built-up surface layer, which includes a circuit, and which is made by a build-up process" and "organic substrate is a built-up organic substrate provided on the inorganic substrate and made by a build-up process", these would not carry patentable weight in this claim drawn to a structure, because distinct structure is not necessarily produced.

Note that a "product by process" claim is directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); and *In re Marosi et al.*, 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that the applicant has the burden of proof in such cases, as the above case law makes clear.

Regarding claim 40, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use silicon substrate in prior art's device in order to form the device of conventional substrate material, of which official notice is taken.

Regarding claims 42-43, Hashemi et al. teach in figure 8 and related text an organic substrate is composed of a plurality of stacked printed circuit board. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use an organic substrate is composed of a plurality of stacked printed circuit board in Shaheen's device in order to reduce the size of the device.

Regarding claims 44-45, Hashemi et al. teach in figure 8 and related text organic substrate has an outer surface layer which is a built-up surface layer, which includes a circuit, wherein the organic substrate further comprises at least one passive component.

Regarding claim 48, Shaheen teaches in figure 1 and related text a bonding layer 16 which is provided between the inorganic substrate and the organic substrate, and which bonds together the inorganic substrate and the organic substrate.

Claims 41 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shaheen and Hashemi et al., as applied to claims 37 and 45 above, and further in view Nishide et al. (5,827,605).

Shaheen and Hashemi et al. teach substantially the entire claimed structure, as applied to claims 37 and 45 above, except one passive component of the organic and inorganic substrate is selected from the group consisting of a capacitor, an inductor, a resistor, and any mixture thereof.

Nishide et al. teach in figure 1 and related text one passive component 4, 5, 8 selected from the group consisting of a capacitor, an inductor, a resistor, and any mixture thereof.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use one passive component of the organic and inorganic substrate is selected from the group consisting of a capacitor, an inductor, a resistor, and any mixture thereof, in prior art's device in order to reduce the size of the device by incorporating the passive components within the substrates.

Claims 47, 49-52, 54-57 and 59-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shaheen and Hashemi et al., as applied to claim 37 above, and further in view Berger et al. (6,528,145).

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Regarding claims 47, 49 and 59, Shaheen and Hashemi et al. teach substantially the entire claimed structure, as applied to claim 37 above, except having two organic substrates which are laminated to respective sides of the inorganic substrate

Berger et al. teach in figure 3 and related text two substrates, comprising print circuit boards (column 10, lines 32-45 and column 12, lines 44-46) integrated with the at least an inorganic substrate 20.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to laminate two organic substrates to respective sides of the inorganic substrate, in prior art's device in order to reduce the size of the device by providing more compact structure.

Note that prior art's device comprises circuits for electrical connections between outer input/output ports and the at least one passive component of the inorganic substrate through the two organic substrates.

Regarding the process limitations recited in claims 47, 51-52, 55-56 and 59 ("passive component is made from the process selected from the group consisting of thick film process and thin film process", "passive component is made by a semiconductor fabrication process", "plurality of printed circuit boards are stacked and have separately-fabricated circuitry", "organic substrate has an outer surface layer which is a built-up surface layer, which includes a circuit, and which is made by a build-up process" and "organic substrate is a built-up organic substrate provided on the inorganic substrate

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and made by a build-up process”, these would not carry patentable weight in this claim drawn to a structure, because distinct structure is not necessarily produced.

Note that a “product by process” claim is directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); and *In re Marosi et al.*, 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a “product by process” claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in “product by process” claims or not. Note that the applicant has the burden of proof in such cases, as the above case law makes clear.

Regarding claim 52, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use silicon substrate in prior art's device in order to form the device of conventional substrate material, of which official notice is taken.

Regarding claims 54-55, Hashemi et al. teach in figure 8 and related text an organic substrate is composed of a plurality of stacked printed circuit board. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use

an organic substrate is composed of a plurality of stacked printed circuit board in Shaheen's device in order to reduce the size of the device.

Regarding claims 56-57, Hashemi et al. teach in figure 8 and related text organic substrate has an outer surface layer which is a built-up surface layer, which includes a circuit, wherein the organic substrate further comprises at least one passive component.

Regarding claim 60, prior art's device includes a covering layer which is provided on the inorganic substrate and covers the inorganic substrate, which integrates the inorganic substrate with one of the two organic substrates, and which comprises circuits for providing electrical connections between the at least one passive component of the inorganic substrate and said one of the two organic substrates, wherein the inorganic substrate is fully embedded in said one of the two organic substrates.

Regarding claim 61, Shaheen teaches in figure 1 and related text a bonding layer 16 which is provided between the inorganic substrate and the organic substrate, and which bonds together the inorganic substrate and the organic substrate.

Claims 53 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shaheen, Hashemi et al. and Berger et al., as applied to claims 49 and 57 above, and further in view Nishide et al. (5,827,605).

Shaheen, Hashemi et al. and Berger et al. teach substantially the entire claimed structure, as applied to claims 49 and 57 above, except one passive component of the organic and inorganic substrate is selected from the group consisting of a capacitor, an inductor, a resistor, and any mixture thereof.

Nishide et al. teach in figure 1 and related text one passive component 4, 5, 8 selected from the group consisting of a capacitor, an inductor, a resistor, and any mixture thereof.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use one passive component of the organic and inorganic substrate is selected from the group consisting of a capacitor, an inductor, a resistor, and any mixture thereof, in prior art's device in order to reduce the size of the device by incorporating the passive components within the substrates.

Response to Arguments

Applicant's arguments with respect to claims 37-61 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. References B-D are cited as being related to bonding organic/inorganic substrates.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ori Nadav whose telephone number is 571-272-1660. The examiner can normally be reached between the hours of 7 AM to 4 PM (Eastern Standard Time) Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne Gurley can be reached on 571-272-4670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



O.N.
9/17/07

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